

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Original) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

Cys-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys, (SEQ ID NO: 110),

wherein:

X₄ is Asn, Glu, Asp, or Met;

X₅ is Leu, Phe, Tyr, Trp, Val, Met, Ile, or Asn;

X₆ is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp, Tyr, Gly, or Thr;

X₇ is Lys, Phe, Asp, Gly, Leu, Asn, Trp, Ala, Gln, or Thr;

X₈ is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln, Trp, His, Arg, Met, Val, or Leu;

X₉ is Gln, Lys, Leu, or Gly;

X₁₀ is Trp, Ala, or Tyr; and

X₁₁ is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp, Tyr, Gly, Leu, or Glu.

2. (Original) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

X₁-X₂-X₃-Cys-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₂-X₁₃-X₁₄, (SEQ ID NO:111),

wherein:

X₁ is Asp, Asn, Ala, or Ile;

X₂ is Trp;

X₃ is Val, Ile, Met, Tyr, Phe, Pro, or Asp;

X₄ is Asn, Glu, Asp, or Met;

X₅ is Leu, Phe, Tyr, Trp, Val, Met, Ile, or Asn;
X₆ is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp, Tyr, Gly, or Thr;
X₇ is Lys, Phe, Asp, Gly, Leu, Asn, Trp, Ala, Gln, or Thr;
X₈ is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gin, Trp, His, Arg, Met, Val, or Leu;
X₉ is Gln, Lys, Leu, or Gly;
X₁₀ is Trp, Ala, or Tyr; and
X₁₁ is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp, Tyr, Gly, Leu, or Glu.
X₁₂ is Asn, Asp, Glu, Pro, Gln, Ser, Phe, or Val;
X₁₃ is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu, Thr, Lys, Trp, or Arg; and
X₁₄ is Leu, Met, Val, Tyr, Ala, Ile, Trp, His, Pro, Gln, Glu, Phe, Lys, Arg, or Ser.

3. (Previously presented) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

Cys-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys, (SEQ ID NO:3)

wherein:

X₄ is Asn, Glu, or Met;
X₅ is Asn, Leu, Met or Phe;
X₆ is Asp, Gly, Ile, Lys Phe or Thr;
X₇ is Ala, Gln, Gly, Lys or Thr;
X₈ is Arg, Asn, Asp, Glu or Gly;
X₉ is Gln, Gly or Leu;
X₁₀ is Ala, Trp or Tyr;
X₁₁ is Ala, Gly, His, Phe, Thr or Val.

4. (Original) The polypeptide according to claim 3, wherein:

X₄ is Glu;
X₅ is Asn, Leu, Met or Phe;
X₆ is Asp, Gly, Ile, Lys Phe or Thr;

X₇ is Lys;

X₈ is Arg, Asn, Asp, Glu or Gly;

X₉ is Gln;

X₁₀ is Trp;

X₁₁ is Ala, Gly, His, Phe, Thr or Val.

5. (Original) The polypeptide according to claim 3, comprising the amino acid sequence:

X₁-X₂-X₃-Cys-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₂-X₁₃-X₁₄, (SEQ ID NO:1),

wherein:

X₁ is Asn or Asp;

X₂ is Trp;

X₃ is Asp, Phe or Val;

X₄ is Asn, Glu or Met;

X₅ is Asn, Leu, Met or Phe;

X₆ is Asp, Gly, Ile, Lys, Phe or Thr;

X₇ is Ala, Gln, Gly, Lys or Thr;

X₈ is Arg, Asn, Asp, Glu or Gly;

X₉ is Gln, Gly or Leu;

X₁₀ is Ala, Trp or Tyr;

X₁₁ is Ala, Gly, His, Phe, Thr or Val;

X₁₂ is Asn, Gln, Phe, Ser or Val;

X₁₃ is Arg, Leu, Pro or Ser; and

X₁₄ is Leu, Ser, Trp or Tyr.

6. (Previously presented) The polypeptide according to claim 5, having the amino acid sequence:

X₁-Trp-Val-Cys-Glu-X₅-X₆-Lys-X₈-Gln-Trp-X₁₁-Cys-Asn-X₁₃-X₁₄ (SEQ ID NO:2),
wherein:

X₁ is Asn or Asp;
X₅ is Asn, Leu, Met or Phe;
X₆ is Asp, Gly, Ile, Lys, Phe or Thr;
X₈ is Arg, Asn, Asp, Glu or Gly;
X₁₁ is Ala, Gly, His, Phe, Thr or Val;
X₁₃ is Arg, Leu, Pro or Ser; and
X₁₄ is Leu or Tyr.

7. (Original) The polypeptide according to claim 5, comprising an amino acid sequence selected from the group consisting of:

Asn-Trp-Val-Cys-Asn-Leu-Phe-Lys-Asn-Gln-Trp-Phe-Cys-Asn-Ser-Tyr; (SEQ ID NO:4);

Asp-Trp-Val-Cys-Glu-Asn-Lys-Lys-Asp-Gln-Trp-Thr-Cys-Asn-Leu-Leu; (SEQ ID NO:5);

Asn-Trp-Asp-Cys-Met-Phe-Gly-Ala-Glu-Gly-Trp-Ala-Cys-Ser-Pro-Trp; (SEQ ID NO:6);

Asp-Trp-Val-Cys-Glu-Lys-Thr-Thr-Gly-Gly-Tyr-Val-Cys-Gln-Pro-Leu; (SEQ ID NO:7);

Asn-Trp-Phe-Cys-Glu-Met-Ile-Gly-Arg-Gln-Trp-Gly-Cys-Val-Pro-Ser; (SEQ ID NO:8); and

Asp-Trp-Val-Cys-Asn-Phe-Asp-Gln-Gly-Leu-Ala-His-Cys-Phe-Pro-Ser. (SEQ ID NO:9).

8. (Original) A polypeptide having the ability to bind CEA comprising the amino acid sequence:

X₁-X₂-X₃-Cys-X₄-X₅-X₆-X₇-X₈-X₉-X₁₀-X₁₁-Cys-X₁₂-X₁₃-X₁₄, (SEQ ID NO:1), wherein:

X₁ is Asp, Asn, Ala, or Ile;

X₂ is Trp;

X₃ is Val, Ile, Met, Tyr, Phe, Pro, or Asp;

X₄ is Asn, Glu, or Asp;

X₅ is Leu, Phe, Tyr, Trp, Val, Met, Ile, or Asn;

X₆ is Phe, Leu, Asp, Glu, Ala, Ile, Lys, Asn, Ser, Val, Trp, or Tyr;

X₇ is Lys, Phe, Asp, Gly, Leu, Asn, or Trp;

X₈ is Asn, Pro, Phe, Gly, Asp, Ala, Ser, Glu, Gln, or Trp;

X₉ is Gln, or Lys;

X₁₀ is Trp;

X₁₁ is Phe, Thr, Met, Ser, Ala, Asn, Val, His, Ile, Pro, Trp, or Tyr;

X₁₂ is Asn, Asp, Glu, Pro, Gln, or Ser;

X₁₃ is Val, Leu, Ile, Pro, Ala, Gln, Ser, Met, Glu, Thr, Lys, or Trp; and

X₁₄ is Leu, Met, Val, Tyr, Ala, Ile, Trp, His, Pro, Gln, Glu, Phe, Lys, or Arg.

9. (Previously presented) The polypeptide of Claim 1, wherein:

X₄ is Asn, or Glu;

X₅ is Leu, Phe, Tyr, Trp, or Ile;

X₆ is Phe, Leu, Asp, Glu, Ile, Ser, Val, or Gly;

X₇ is Lys;

X₈ is Asn, Pro, Gly, Asp, Ala, Ser, His, Met, Val, or Leu;

X₉ is Gln;

X₁₀ is Trp;

X₁₁ is Phe, Thr, Ser, Ala, Asn, Val, His, Ile, Trp, Tyr, Leu, or Glu.

10. (Previously presented) The polypeptide of Claim 2, wherein:

X₁ is Asp, or Asn;

X₂ is Trp;

X₃ is Val, Ile, or Met;

X₄ is Asn, or Glu;

X₅ is Leu, Phe, Tyr, Trp, or Ile;

X₆ is Phe, Leu, Asp, Glu, Ile, Ser, Val, or Gly;

X₇ is Lys;

X₈ is Asn, Pro, Gly, Asp, Ala, Ser, His, Met, Val, or Leu;

X₉ is Gln;

X₁₀ is Trp;

X₁₁ is Phe, Thr, Ser, Ala, Asn, Val, His, Ile, Trp, Tyr, Leu, or Glu;

X₁₂ is Asn, or Asp;

X₁₃ is Val, Leu, Ile, Pro, Ala, Gln, Ser, or Met; and

X₁₄ is Leu, Met, Val, Tyr, Trp, His, Gln, Arg, or Ser.

11. (Previously presented) The polypeptide according to Claim 2, comprising an amino acid sequence selected from the group consisting of SEQ ID NOs: 37-109 and 113-151.

12. (Original) The polypeptide according to Claim 1, 2, 3, 5, 8, 9, or 10, wherein said polypeptide binds to CEA but does not bind to NCA.

13. (Previously presented) The polypeptide according to claim 1, 2, 3, 5, 8, 9, or 10, wherein said polypeptide has a K_d for CEA which is less than 7 μM.

14. –30. (Cancel)